number of cases; and certainly our best results are such remarks as those of F. Hell, when he describes the breaking of the bright line; his words are clear, frank, and precise.

Besides giving the telescope a sufficient aperture, the maximum amount of light should also be obtained. It would be well, therefore, if possible to determine accurately beforehand the exact thickness of dark-glasses most suitable for the observation of the coming transit of *Venus*, and this might be obtained experimentally at the previous transit of *Mercury*. This last question of the dark-glass, which seems hitherto to have been considered but of little moment, is in reality one of the most important conditions in the observation.

If I might add one remark to these useful conclusions of M. André, I should think it would be well to make experiments also as to the tint of coloured glass best suited for diminishing the light of the photosphere, without altering considerably that of the chromosphere, in order to give some value to the first external contact. Dr. Janssen has already shown us the feasibility of this plan, and demonstrated that the spectroscope is not required in order to see *Venus* on the bright background of the chromosphere.

On the Orbit of α Centauri. By A. Marth, Esq.

(*From a Letter to E. Dunkin, Esq., F.R.S.*)

At the close of the last meeting of the Royal Astronomical Society you proposed that I should furnish in writing the substance of some remarks on the Double Star *α Centauri*, which I had been permitted to address to the meeting just before.

Though it has been pointed out some years ago that the comes of *α Centauri* would reach its apparent periastre in the course of the year 1875; and though the great importance of securing series of good observations during the preceding and following years is recognised and appreciated by all who keep themselves informed on the subject of binary stars; there seems cause to apprehend that the observers in the Southern Hemisphere, who alone are favourably situated for making such observations, have persisted in their strange neglect of this the most interesting of all double stars. Thinking that it might do some good, and could do no harm, if the subject were brought before the meeting, and if the personal friends of the Southern observers were appealed to for their friendly assistance, I asked leave to occupy a few minutes before the adjournment with a short statement of the circumstances of the case, and to exhibit a diagram which would render any detailed explanation superfluous. In order to enable readers of this letter to reconstruct the diagram (and they will find it far more instructive and satisfactory if they themselves

draw it on a larger scale on squared paper than if they got it ready printed on a small scale), I subjoin the rectangular co-ordinates of a sufficient number of points of both the true and the apparent orbits, so that the two ellipses may be easily drawn by hand. The co-ordinates have been deduced from Mr. Powell's elements published in the *Monthly Notices*, vol. xxx. page 192, the line of nodes common to both ellipses being taken as the basis. The x co-ordinates are consequently the same for both ellipses, while the (y) co-ordinates of the projected or apparent ellipse have a constant ratio to the y co-ordinates of the true ellipse. The first column of the table contains the corresponding true anomalies v of the comes:—

v °	x "	(y) "	y "	
300·80	+ 8·96	0	0	Node.
330	+ 6·69	+ 3·74	+0·57	
0	+ 3·72	+ 6·23	+0·95	Perihelion.
30·80	0	+ 7·68	+1·17	
49·91	− 2·76	+ 7·96	+1·22	Maximum of y.
70	− 6·17	+ 7·57	+1·15	
90	−10·22	+ 6·09	+0·93	
110	−14·96	+ 2·85	+0·44	
120·80	−17·96	0	0	Node.
129·75	−19·88	− 3·13	−0·48	End of minor axis.
140	−22·03	− 7·67	−1·17	
154·12	−23·41	−15·39	−2·35	Maximum of x.
170	−21·00	−24·33	−3·71	
180	−16·90	−28·35	−4·33	Aphelion.
191·69	−10·42	−30·08	−4·59	Maximum of y.
200	− 5·59	−29·29	−4·47	
210·80	0	−26·40	−4·03	
220	+ 3·73	−23·02	−3·51	
230·25	+ 6·70	−18·98	−2·90	End of minor axis.
240	+ 8·54	−15·27	−2·33	
250	+ 9·63	−11·80	−1·80	
267·48	+10·23	− 6·73	−1·03	Maximum of x.
270	+10·22	− 6·09	−0·93	
290	+ 9·59	− ·	−0·28	
Centre of ellipse	− 6·59	−11·06	−1·69	

The circle of declination passes through the points—

	x = "	y = "
North	+ 20	− 9·03
South	− 20	+ 9·03

The co-ordinates of the chief positions of the comes, which have been deduced from observations, and have been published, are the following (*vide Monthly Notices*, vols. xv. p. 88, xvi. p. 120, xvii. p. 19, xxiv. p. 170, and *Memoirs*, vols. xxiv. xxv. and xxxii.)

Time.	x ″	y ″	Observer.	Place.
1826·012	−22·18	−3·47	Dunlop	Paramatta
30·012	−19·60	−3·71	Johnson	St. Helena
34·79	−16·87	−4·27	Herschel	Feldhausen
37·34	−15·46	−4·55	,,	,,
46·866	− 8·50	−4·91	Jacob	Madras
48·023	− 6·70	−4·46	,,	,,
50·926	− 4·12	−4·33	,,	,,
53·049	− 2·05	−4·06	,,	,,
54·003	− 1·30	−4·01	Jacob & Powell	,,
55·318	+ 0·09	−4·07	Powell	,,
56·015	+ 0·54	−3·77	Jacob	,,
56·591	+ 1·11	−3·72	,,	,,
59·382	+ 3·67	−3·57	Powell	,,
60·114	+ 4·41	−3·58	,,	,,
60·479	+ 4·55	−3·26	,,	,,
61·052	+ 5·08	−3·33	,,	,,
61·305	+ 5·31	−3·20	,,	,,
61·576	+ 5·45	−3·15	,,	,,
62·205	+ 6·09	−3·01	,,	,,
63·028	+ 6·63	−2·80	,,	,,
64·110	+ 7·44	−2·50	,,	,,
1870·1	+10·22	−0·69	,,	,,

Predicted Positions.

	x ″	y ″
1872·0	+ 8·64	+0·11
73·0	+ 6·88	+0·52
74·0	+ 4·31	+0·89
75·0	+ 1·16	+1·13
76·0	− 2·17	+1·21
77·0	− 5·28	+1·18
1878·0	− 8·07	+1·07

The first four of these places have been observed in the Southern Hemisphere, all the others at Madras, where *α Centauri* does not reach an altitude of 17° above the horizon. Powell's

published observations represent upwards of 2,000 single measures (*vide Memoirs*, vol. xxxii. p. 93). Of his later observations made after 1864, only the normal place for 1870–1 seems to have become publicly known. It is to be hoped that he may have been able to watch and observe the comes of his favourite double star through the most interesting portion of its orbit; but with the star so near the horizon and with a 4-inch telescope, the task cannot but have been beset with considerable difficulties. Mr. Powell will have deserved all the more credit and honour. It might fairly have been expected that observers who are provided with better instruments, and are far more favourably placed for observing α *Centauri*, would have rejoiced at having the opportunity of observing it just during those years when the observations are of the highest permanent value. If Mr. Powell's orbit and remarks were not sufficient to attract their attention, a glance over the Ephemeris deduced by Mr. Hind from Powell's elements, and published in the *Monthly Notices* for November 1872, vol. xxx. page 54, might have shown them the lucky and important chance within their grasp. The observations need not have interfered with other work, as they demand no fixed days and hours, and might have been made in daytime. But it seems that the most favourable time and opportunity has been allowed to slip away unused. However, as a couple of position-angles which Lord Lindsay has obtained in 1874 during his Mauritius expedition, are said to indicate that the comes of α *Centauri* is more than half a year behind its predicted position, the Southern observers may have a chance of regaining a portion of their neglected opportunities; and I suggested, therefore, that their personal friends should call their attention to the matter. But as you and other members of the Council have expressed the opinion that it would be better that I should put my remarks on paper for the *Monthly Notices*, I defer to your and their opinion, and I place accordingly these lines at your disposal, in the hope that they may be of some service.

1876, *December* 13.

A Preliminary List of Binary and other interesting Double Stars.

By J. M. Wilson, Esq., M.A., and J. Gledhill, Esq., F.R.A.S.

The following list is intended to be the basis of a working List of Binary and other interesting Double Stars, of which it is desirable to have accurate measures at not very distant intervals of time; and we think it may be of assistance to those observers who take up this branch of astronomy to have such a list for their guidance. We publish it also, with the hope that it may attract the attention of those who have specially devoted themselves to the measurement of binary stars, and that they will by their criticisms point out any errors that may exist in it, of